

ADDENDUM NO. 2**TO THE DRAWINGS AND SPECIFICATIONS FOR:**

Preschool Expansion and
District Office Renovation
Mount Gilead Exempted Village School District

July 22, 2026

THE ADDENDUM MUST BE ACKNOWLEDGED ON THE BID FORM.

TO ALL BIDDERS:

This addendum supplements and amends the original drawings and specifications and shall be taken into account in preparing your proposal. It is a part of the Contract Documents.

Item 1:

Project Manual, Specifications Section 081113, Hollow Metal Door Frames, revisions; Knock-down (KD) will be acceptable at new gypsum partition walls.

ITEM 2:

Project Manual, Specifications Section 087100 Door Hardware, Paragraph 1.2.H, revision;

Replace the original Door Hardware Schedule with the one attached. The District utilizes House of Security, 151 E 5th Avenue, Columbus, OH 43201 for their keying systems.

ITEM 3:

Project Manual, Specifications Section 099112, Resinous Flooring, clarification; The B-125 with the 580 Waterproofing and Crack Isolation can be used together will be required for this project.

ITEM 4:

Project Manual, Specifications Section 099112, Painting, revision; Replace the original Specification Section with the one attached.

ITEM 5:

Project Manual, Specifications Section 142100 Electric Traction Elevator, Paragraph 1.2.H, clarification;

The inside cab dimension to be nominal 6'-6" x 5'-7". All final dimensions will be determined by the Elevator manufacturer.

ITEM 6:

Project Manual, Specification Section 230923 Direct Digital Control Systems for HVAC, paragraph 2.1.B, add:

"4. Alerton ALER-9000 JACE"

ITEM 7:

Project Manual, Specifications Section 282301 Video Surveillance Ip, revision:

Replace the original Specification Section with the one attached.

ITEM 8:

Project Manual, Specifications Section 273123 Integrated Telephone System, add; Attached Specification Section.

ITEM 9:

Drawings, Sheet A4.2, Second Floor Finish Plan, clarification;

Rooms 407,409, and 419 have existing ceilings to remain and are to be painted. There are existing Glazed Block walls throughout the building. All Wall Tile indicated on sheet A4.2 is new wall tile.

ITEM 10:

Drawing, Sheets A4.4 and A4.6, Add dimensional letters "welcome to MOUNT GILEAD PRESCHOOL". See attached.

ITEM 11:

Drawing, Sheets A4.1, Add appliance model numbers. See attached.

ITEM 12:

Drawing, Sheets A4.1, A4.2, A4.3, A4.4, A4.5. Rooms 422 Break, 424 Conference, 426 Office were revised. Casework, finishes, furniture, and signage updated. See attached.

ITEM 13:

Drawing, Sheet A4.5; RES-1 clarified integral cove base height – 4" H. See attached.

ITEM 14:

Drawings, Sheet A6.1 Wall Sections, clarification;

Patch all floors and ceilings tight to elevator shaft with like materials. Floor / ceiling assemblies **do not** need to be fire rated between floors. Gypsum Board is acceptable at ceiling locations.

ITEM 15:

Drawings, Sheet P1.0, Plumbing Floor Plan – Ground Floor,

A. Delete Fire Protection General Notes & Fire Protection Coded Notes. See attached.

B. Partial Floor Plan #2: Delete limited area sprinkler system. See attached.

ITEM 16:

Drawings, Sheet P1.2, Plumbing Floor Plan – Second Floor,

- A. Add coded notes 7 & 8. See attached
- B. Add SINK-2 to Break 422. See attached.

ITEM 17:

Drawings, Sheet P8.1, Plumbing Schedules,

- A. Plumbing Fixture Schedule: Add SINK-2. See attached.

ITEM 18:

Drawings, Sheet P8.2, Plumbing Stacks,

- A. Add Stack 'D'. See attached.

ITEM 19:

Drawings, Sheet H8.1, HVAC Schedules,

- A. Add Air-source Heat Pump Schedule. See attached.

ITEM 20

Drawings, Sheet H8.3, HVAC Details,

- A. Add sheet. See attached.

ITEM 21:

Drawings, HVAC Sheets, All, clarification;

The District is currently under contract with Control Concepts of Ohio (CCO) for their Building Automation Controls System. Contact Eric Swain at (330)806-5332, erics@controlsohio.com or Lanny O'Hail (234)303-0378, lannyo@controlsohio.com for further information.

ITEM 22:

Drawings, Sheet E0.00, General Notes & Abbreviations, Electrical General Notes, delete Note U which is not applicable to this project. See attached.

ITEM 23:

Drawings, Sheet E1.00, Electrical Demolition Floor Plans, Electrical Demolition, Coded Note #2, correct Sheet number referenced. See attached.

ITEM 24:

Drawings, Sheet E1.12, Lighting Second Floor Plans,

- A. Add CL1 exit sign to middle of Corridor. See attached.
- B. Add missing light fixture labels. See attached.

ITEM 25:

Drawings, Sheet E8.11, Electrical Schedules, Lighting Fixture Schedule,

- A. CL1: Delete reference to W1 and wire guards. See attached.
- B. R12: Add Green Creative as an approved manufacturer. See attached.

ITEM 26:

Drawings, Sheet SU1.0, Site Utility Plan,

A. Add Utility Standoff Brackets Detail from the Power Company.

B. Power Riser Diagram:

a. Add wire size notes and wireway amperage.

Revise wire size reference in note. See attached.

ITEM 27:

Drawings, Sheet T0.2 Technology Responsibility Matrix, add;

Add sheet. See attached

ITEM 28:

Drawings, Updated the Joist Reinforcement schedule, on S1.02, to refer to 13/S2.11 for the joist seat stiffener plate reinforcement for the diagonal and horizontal reinforcement. See attached

ITEM 29:

Drawings, Added back-to-back channels to wall lintel beams for the removal of bearing walls on S1.02. See attached

ITEM 30:

Drawings, Shifted the location of the back-to-back channels to wall lintel beam at the elevator to align with the opening for the new corridor on S1.02. See attached

ITEM 31:

Drawings, Updated Detail 8/S2.11. See attached

ITEM 32:

Drawings, Updated callout for Detail 13/S2.11 to refer to Details 11&12/S2.11. See attached.

ITEM 33:

Drawings, Added Details 14&15/S2.11 for new back-to-back channels to wall lintel beams. See attached.

END OF ADDENDUM NO. 2

Attachments Noted Above: Drawings: A4.1, A4.2, A4.3, A4.4, A4.5, A4.6, T0.2, SU1.1, P1.0, P1.2, P8.1, P8.2, H8.1, H8.3, E0.00, E1.0, E1.12, E8.11, S0.01, S0.02, S0.03, S1.01, S1.02, S2.01, S2.11
Specifications: 087100, 099113, 272123, 282301

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:
 - a. "Metal Doors and Frames"
 - b. "Flush Wood Doors"
 - c. "Stile and Rail Wood Doors"
 - d. "Interior Aluminum Doors and Frames"
 - e. "Aluminum-Framed Entrances and Storefronts"
 - f. "Stainless Steel Doors and Frames"
 - g. "Special Function Doors"
 - h. "Entrances"
6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 70 – National Electric Code
2. NFPA 80 – Standard for Fire Doors and Other Opening Protectives
3. NFPA 101 – Life Safety Code
4. NFPA 105 – Smoke and Draft Control Door Assemblies
5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
 - a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
 - b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
 - a. Wiring Diagrams: For power, signal, and control wiring and including:
 - 1) Details of interface of electrified door hardware and building safety and security systems.
 - 2) Schematic diagram of systems that interface with electrified door hardware.
 - 3) Point-to-point wiring.
 - 4) Risers.
3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
 - a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule:
 - a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
 - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
 - c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect's hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
 - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
 5. Key Schedule:
 - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
 - b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
 - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
 - e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
 - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
- C. Informational Submittals:
1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
 2. Provide Product Data:
 - a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
 - b. Include warranties for specified door hardware.
- D. Closeout Submittals:
1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
 - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Final approved hardware schedule edited to reflect conditions as installed.
 - d. Final keying schedule

- e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
- f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

- 1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
 - a. Fire door assemblies, in compliance with NFPA 80.
 - b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

- 1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
- 2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
- 3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
 - a. For door hardware: DHI certified AHC or DHC.
 - b. Can provide installation and technical data to Architect and other related subcontractors.
 - c. Can inspect and verify components are in working order upon completion of installation.
 - d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
- 4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

- 1. Fire-Rated Door Openings:
 - a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
 - b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
- 2. Smoke and Draft Control Door Assemblies:
 - a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105

- b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.
 - 3. Electrified Door Hardware
 - a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
 - 4. Accessibility Requirements:
 - a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.
- C. Pre-Installation Meetings
- 1. Keying Conference
 - a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2) Preliminary key system schematic diagram.
 - 3) Requirements for key control system.
 - 4) Requirements for access control.
 - 5) Address for delivery of keys.
 - 2. Pre-installation Conference
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Inspect and discuss preparatory work performed by other trades.
 - c. Inspect and discuss electrical roughing-in for electrified door hardware.
 - d. Review sequence of operation for each type of electrified door hardware.
 - e. Review required testing, inspecting, and certifying procedures.
 - f. Review questions or concerns related to proper installation and adjustment of door hardware.
 - 3. Electrified Hardware Coordination Conference:
 - a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

- E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

1.07 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
 - 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
 - 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
 - a. Mechanical Warranty
 - 1) Locks
 - a) 10 years
 - 2) Closers
 - a) 30 years

1.08 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."
 - 1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.
- B. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.
- C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

- A. Fabrication
 - 1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
 - 2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
 - 3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
 - 1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.
- C. Cable and Connectors:
 - 1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
 - 2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.
 - 3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Ives 5BB series
2. Acceptable Manufacturers and Products:
 - a. McKinney TB series
 - b. Best FBB series

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
 - a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
 - b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
 - a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
5. 2 inches or thicker doors:
 - a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - a. Steel Hinges: Steel pins
 - b. Non-Ferrous Hinges: Stainless steel pins
 - c. Out-Swinging Exterior Doors: Non-removable pins
 - d. Out-Swinging Interior Lockable Doors: Non-removable pins
 - e. Interior Non-lockable Doors: Non-rising pins
9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

2.04 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.05 MORTISE LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Schlage L400 series
2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide indicator window measuring a minimum 2-inch x 1/2 inch with 180-degree visibility. Provide messages color-coded with full text and/or symbols, as scheduled, for easy visibility.
3. Provide locks manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
4. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
5. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1-inch (25 mm) throw, constructed of stainless steel.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.

2.06 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Schlage ND series
2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide escutcheon with lock status indicator window on top of lockset rose:
 - a. Escutcheon height (including rose) 6.05 inches high by 3.68 inches wide.
 - b. Indicator window measuring a minimum 3.52-inch by .60 inch with 1.92 square-inches of front facing viewing area and 180-degree visibility with a total of .236 square-inches of total viewable area.

- c. Provide snap-in serviceable window to prevent tampering. Lock must function if indicator is compromised.
 - d. Provide messages color-coded with full text and symbol, as scheduled, for easy visibility.
 - e. Unlocked and Unoccupied message will display on white background, and Locked and Occupied message will display on red background.
- 3. Cylinders: Refer to "KEYING" article, herein.
 - 4. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
 - 5. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
 - 6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
 - 7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
 - 8. Provide electrified options as scheduled in the hardware sets.
 - 9. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
 - a. Lever Design: RHO.

2.07 CYLINDERS

A. Manufacturers and Products:

- 1. Scheduled Manufacturer and Product:
 - a. Schlage Everest 29 T
- 2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

- 1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
- 2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
 - a. Patented Restricted: cylinder with interchangeable core with patented, restricted keyway.
- 3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
- 4. Nickel silver bottom pins.

2.08 KEYING

A. Scheduled System:

- 1. Existing factory registered system:
 - a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

- 1. Construction Keying:

- a. Replaceable Construction Cores.
 - 1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
 - a) 3 construction control keys
 - b) 12 construction change (day) keys.
 - 2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.
- 2. Permanent Keying:
 - a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
 - 1) Master Keying system as directed by the Owner.
 - b. Forward biting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
 - c. Provide keys with the following features:
 - 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
 - d. Identification:
 - 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
 - 2) Identification stamping provisions must be approved by the Architect and Owner.
 - 3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
 - 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 - 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
 - e. Quantity: Furnish in the following quantities.
 - 1) Permanent Control Keys: 3.
 - 2) Master Keys: 6.
 - 3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
 - 4) Key Blanks: Quantity as determined in the keying meeting.

2.09 DOOR CLOSERS

A. Manufacturers and Products:

- 1. Scheduled Manufacturer and Product:
 - a. LCN 4040XP series
- 2. Acceptable Manufacturers and Products:
 - a. No Substitute

B. Requirements:

- 1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
- 2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
- 3. Cylinder Body: 1-1/2-inch (38 mm) diameter piston with 5/8-inch (16 mm) diameter double heat-treated pinion journal. QR code with a direct link to maintenance instructions.

4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards. Provide snap-on cover clip, with plastic covers, that secures cover to spring tube.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck. Provide graphically labelled instructions on the closer body adjacent to each adjustment valve. Provide positive stop on reg valve that prevents reg screw from being backed out.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.
11. Closers shall be capable of being upgraded by adding modular mechanical or electronic components in the field.

2.10 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.11 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:
 - a. Glynn-Johnson
2. Acceptable Manufacturers:
 - a. Rixson
 - b. Sargent

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.12 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button or thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.13 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.14 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Scheduled Manufacturer:

1. Zero International

B. Acceptable Manufacturers:

1. Reese
2. Legacy

- C. Seals and Gasketing: Provide continuous gasketing on exterior openings, to the head and jambs, forming a continuous seal between the door and the frame. Provide smoke, light, or sound gasketing on interior doors where indicated.
 - 1. Provide self-tapping fasteners for aluminum extruded gasketing being applied to hollow metal frames.
 - a. Provide non-corrosive fasteners for all exterior applications.
 - b. Provide security fasteners where indicated.
 - 2. Provide neoprene, EPDM, silicone, or nylon brush inserts as specified in hardware sets. Provide non brush inserts of solid or sponge cell, as specified in hardware sets. Vinyl inserts are not allowed except where specified in hardware sets.
- D. Smoke Labeled Gasketing: At all smoke labeled openings, provide smoke listed perimeter gasketing assemblies complying with NFPA 105 listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for smoke control ratings indicated based on testing according to UL 1784.
- E. Fire Listed Gasketing: Assemblies complying with NFPA 80 that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction for fire ratings indicated based on testing according to UL-10C.
 - 1. Where frame-applied intumescent seals are required by the manufacturer, provide gaskets that comply with UL10C Standard for Positive Pressure Fire Tests of Door Assemblies and UBC 7-2, Fire Tests of Door Assemblies.
- F. Sound-Rated Gasketing: Provide acoustic gasketing to meet Sound Transmission Class (STC) rating required.
- G. Meeting-Stile Gasketing: Provide meeting-stile gasketing that fastens to the meeting stiles forming a continuous seal when doors are closed.
- H. Door Sweeps or Shoes: Apply to the bottom of the door to close the gap between the door bottom and finished floor or saddle threshold.
 - 1. Provide solid neoprene, EPDM, silicone, or nylon brush type of seal as specified in hardware sets. Vinyl inserts are not allowed except where specified in hardware sets.
- I. Automatic Door Bottoms:
 - 1. Provide closed cell sponge, bulb neoprene. or EPDM type of seal as specified in hardware sets.
 - 2. Door bottom to be mortised, semi mortised, or surface mount as with a minimum thickness as specified in hardware sets.
- J. Rain Drips:
 - 1. Provide overhead rain drips for out-swinging hollow metal doors that are not covered against 45 degree blowing rain. Aluminum extrusion to be a minimum of .088 inches thick and extend 2.50 inches from the face of the frame, in anodized finish to match door.
 - 2. Door sweeps or shoes with integral rain drip must meet ADA requirements
- K. Thresholds: Provide threshold units not less than 4 inches wide, formed to accommodate change in floor elevation where indicated, and fabricated to accommodate door hardware and fit door frames.

1. Threshold extrusion to be a minimum thickness as specified in hardware sets.

2.15 FINISHES AS DETAILED IN HARDWARE SETS.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 2. Custom Steel Doors and Frames: HMMA 831.
 3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
 4. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.
- C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

- I. Lock Cylinders:
 - 1. Install construction cores to secure building and areas during construction period.
 - 2. Replace construction cores with permanent cores as indicated in keying section.
 - 3. Furnish permanent cores to Owner for installation.
- J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
 - 1. Conduit, junction boxes and wire pulls.
 - 2. Connections to and from power supplies to electrified hardware.
 - 3. Connections to fire/smoke alarm system and smoke evacuation system.
 - 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
 - 5. Connections to panel interface modules, controllers, and gateways.
 - 6. Testing and labeling wires with Architect's opening number.
- K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- L. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.
- M. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- N. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- O. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
- P. Thresholds:
 - 1. Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
 - 2. Aluminum thresholds to be cut-in, and scribed around mullions, frame members, and stops. Do not butt to thresholds. Provide a continuous surface across full width of opening from jamb to jamb.
 - 3. Where aluminum panic-type (rabbeted) thresholds with neoprene inserts are specified, undercut doors as required to properly mate with seal in threshold.
- Q. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
- R. Perimeter Gasketing:
 - 1. Apply to head and jamb, forming seal between door and frame.
 - 2. Install gasketing in a manner eliminating need to cut any seal to install surface mounted hardware. Install compatible mounting bracket for surface mounted hardware unless minimum 1/4 inch thick solid aluminum seals are provided for mounting of surface applied hardware.

- S. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- T. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
 - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 - 3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.
- B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

Hardware Group No. 01

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	ROLLER BUMPER	RB470	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 02

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50TD RHO	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 03

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50TD RHO	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT	689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 06

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50TD RHO	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 07

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT	689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 08

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 09

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	ND78TD RHO IS-CRS	626	SCH
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 10

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	ND78TD RHO IS-CRS	626	SCH
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT	689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 11

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 12

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-OCC	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 13

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 14

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 15

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	CYL X TURN DEAD LOCK	L460T 09-544	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 16

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
2	EA	MANUAL FLUSH BOLT	FB358	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	DBL CYL STORE LOCK	ND66TD RHO	626	SCH
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
2	EA	OH STOP	100S	630	GLY
2	EA	SILENCER	SR64	GRY	IVE
1	EA	NOTE	ASTRAGAL BY DOOR SUPPLIER		B/O

END OF SECTION

Preschool Expansion & District Office Renovation Phase - II

156307 OPT0495164 Version 1

Door#	HwSet#
401	10
401A	14
402	10
402A	14
403	03
404	10
404A	14
405	15
406	10
406A	14
407	13
408	08
409	13
411	15
412	10
412A	16
413	06
414	06
415	12
416	02
417	01
419	07
420	02
421	03
422	09
424	11
426	02

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

SECTION 099112 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following exterior and interior substrates for painting designated IPS – Integrated Paint System.

- 1. Concrete.
- 2. Concrete masonry units (CMUs).
- 3. Glazed masonry units.
- 4. Steel and iron.
- 5. Galvanized metal.
- 6. Wood.
- 7. Portland cement plaster (stucco).
- 8. Gypsum board.
- 9. Cotton or canvas insulation covering.

1.3 DEFINITIONS

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

2. Indicate VOC content.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
 2. Apply coats on Samples in steps to show each coat required for system.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 4.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 2. Apply benchmark samples after permanent lighting and other environmental services have been activated and the area is under lighting and other visual-impacting conditions that match the completed-construction.
 3. Final approval of color selections will be based on mockups.
 - a. If architect's review of colors on actual-conditions mockup indicates that the color is not acceptable, regardless of tentative color approval of verification samples, architect reserves the right to select different colors and the contractor shall then provide a new mockup for review at no additional cost to the owner.
 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Contract Completion.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers' Names: Subject to compliance with requirements, provide products by one of the following:
 - 1. Benjamin Moore & Co.
 - 2. PPG Architectural Coatings.
 - 3. Sherwin-Williams Company (Basis of Design).

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Non-flat Paints and Coatings: 150 g/L.
 - 3. Anti-Corrosive Coatings: 250 g/L.
 - 4. Clear Wood Finishes, Varnishes: 350 g/L.
 - 5. Clear Wood Finishes, Lacquers: 550 g/L.
 - 6. Floor Coatings: g/L.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

7. Waterproofing Sealers: 250 g/L.
8. Sanding Sealers: 275 g/L.
9. All other Sealers: 200 g/L.
10. Clear Shellac: 730 g/L.
11. Pigmented Shellac: 550 g/L.
12. Stains: 250 g/L.

D. Locations: Provide where designated IPS – Integrated Paint System.

E. Colors: Match Architect's samples. Provide color selections made by the Architect and accepted after review of in-place mock-ups.

2.3 CONCRETE MASONRY UNIT BLOCK FILLERS

A. Concrete Masonry Unit Block Filler: Factory-formulated high-performance latex block fillers.

1. Benjamin Moore; M88 Latex Block Filler.
2. PPG; 6-15 Speedhide, Int/Ext Acrylic Masonry Block Filler.
3. Sherwin-Williams; PrepRite Block Filler, B25W25 Series.

2.4 EXTERIOR PRIMERS

A. Exterior Ferrous-Metal Primer: Factory-formulated rust-inhibitive metal primer for exterior application.

1. Benjamin Moore; Moore's IMC Alkyd Metal Primer No. M06.
2. PPG; 90-712 Series Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel.
3. Sherwin-Williams; Pro-Industrial Pro-Cryl Universal Primer B66-310 Series.

B. Exterior Galvanized Metal Primer: Factory-formulated galvanized metal primer for exterior application.

1. Benjamin Moore; Moore's IMC Acrylic Metal Primer No. M04.
2. PPG; 90-712 Series Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel.
3. Sherwin-Williams; Pro-Industrial Pro-Cryl Universal Primer B66-310 Series.

2.5 INTERIOR PRIMERS

A. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.

1. Benjamin Moore; Eco Spec Interior Latex Primer Sealer 231.
2. PPG; 6-2 Speedhide Interior Primer Sealer.
3. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer B28W2600.

B. Interior Wood Primer for Acrylic-Enamel Finishes: Factory-formulated acrylic-latex-based interior wood primer.

1. Benjamin Moore; Eco Spec Interior Latex Primer Sealer 231.
2. PPG; 17-955 SealGrip Acrylic Undercoat.
3. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer B28W2600.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

C. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.

1. Benjamin Moore; Moore's IMC Acrylic Metal Primer No. M04.
2. PPG; 90-712 Series Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel.
3. Sherwin-Williams; Pro-Industrial Pro-Cryl Universal Primer B66-310 Series.

D. Interior Glazed Masonry Units Primer: Factory-formulated urethane modified acrylic primer for interior application.

1. Benjamin Moore; Approved Equal meeting specification requirements.
2. PPG; Approved Equal meeting specification requirements.
3. Sherwin-Williams; Extreme Bond Primer B51-W1150.

2.6 EXTERIOR FINISH COATS

A. Exterior Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-modified alkyd enamel for exterior application.

1. Benjamin Moore; M29 D.T.M. Acrylic Semi-Gloss.
2. PPG; 90-374 Series Pitt-Tech One Pack Interior/Exterior High Performance Waterborne High Gloss DTM Industrial Enamel.
3. Sherwin-Williams; Pro Industrial Zero VOC Semi-Gloss, B66-600 Series.

B. Interior Semigloss Waterbased Alkyd Urethane Enamel: Factory-formulated semigloss waterbased alkyd urethane enamel for interior application.

1. Benjamin Moore; Approved Equal meeting specification requirements.
2. PPG; Approved Equal meeting specification requirements.
3. Sherwin-Williams; Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss, B53-1150/2150 Series.

2.7 INTERIOR FINISH COATS (IPS)

A. Interior Flat or Eggshell Acrylic Paint (Dryfall): Factory-formulated flat or eggshell acrylic latex paint for interior application.

1. Benjamin Moore; M53 Sweep-Up Latex Flat.
2. PPG; 6-715 xi Speedhide Interior Dry-Fog Spray Paint Flat Latex.
3. Sherwin-Williams; Pro Industrial Waterborne Acrylic Dry Fall Eg-Shel B42W00082.

B. Interior Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application.

1. Benjamin Moore; Eco Spec Interior Latex Flat 219.
2. PPG; 6-70 Series SpeedHide Interior Wall Flat-Latex.
3. Sherwin-Williams; ProMar 200 Zero VOC Latex Flat B30-2600 Series.

C. Interior Flat Latex-Emulsion Size: Factory-formulated flat latex-based interior paint.

1. Benjamin Moore; Eco Spec Interior Latex Flat 219.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

2. PPG; 6-70 Series SpeedHide Interior Wall Flat-Latex.
 3. Sherwin-Williams; ProMar 200 Zero VOC Latex Flat B30-2600 Series.
- D. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel.
1. Benjamin Moore; Moorcraft Super Spec Latex Eggshell Enamel 274.
 2. PPG; 6-411 Series SpeedHide Interior Enamel Eggshell Latex.
 3. Sherwin-Williams; ProMar 200 Zero VOC Latex Eg-Shel B20-2600 Series.
- E. Interior Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application.
1. Benjamin Moore; Moorcraft Super Spec Latex Semi-Gloss Enamel 276.
 2. PPG; 6-500 Series SpeedHide Interior Semi-Gloss Latex.
 3. Sherwin-Williams; ProMar 200 Zero VOC Latex Semi-Gloss B31-2600 Series.
- F. Interior Semigloss Acrylic-Modified Alkyd Enamel: Factory-formulated semigloss acrylic-modified alkyd enamel for interior application.
1. Benjamin Moore; M29 D.T.M. Acrylic Semi-Gloss.
 2. PPG; Speedhide WR Alkyd Finish.
 3. Sherwin-Williams; Pro Industrial Zero VOC Semi-Gloss, B66-600 Series.
- G. Interior Semigloss Waterbased Alkyd Urethane Enamel: Factory-formulated semigloss waterbased alkyd urethane enamel for interior application.
1. Benjamin Moore; Approved Equal meeting specification requirements.
 2. PPG; Approved Equal meeting specification requirements.
 3. Sherwin-Williams; Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss, B53-1150/2150 Series.
- H. Interior Satin Urethane Trim Enamel: Factory-formulated satin urethane trim enamel for interior application.
1. Benjamin Moore; Approved Equal meeting specification requirements.
 2. PPG; Approved Equal meeting specification requirements.
 3. Sherwin-Williams; Emerald Urethane Trim Enamel Satin K37-W1753.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

- B. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- C. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Gypsum Board: 12 percent.
- D. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- F. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- B. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
 - 1. Glazed Masonry Units: Thoroughly sand surface of glazed masonry units to a dull finish that will accept primer and paint with proper adhesion. Scrub, clean, and etch glazed masonry units with a muriatic acid and water mixed solution. Allow to dry completely prior to application of primer.
- E. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

- F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- H. Wood Substrates:
 - 1. Scrape and clean knots and apply coat of knot sealer before applying primer.
 - 2. Sand surfaces that will be exposed to view and dust off.
 - 3. Prime edges, ends, faces, undersides, and backsides of wood.
 - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- I. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
 - 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 - 3. Provide finish coats that are compatible with primers used.
 - 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convactor covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 - 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 6. Paint interior surfaces of ducts with a flat, non-specular black paint where visible through registers or grilles.
 - 7. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 8. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 9. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 - 10. Sand lightly between each succeeding enamel or varnish coat.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 - 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 - 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 - 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion. Allow finished coats to cure a minimum of 24 hours before applying another coat.
- E. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
 - 1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 - 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 - 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
 - 4. Touch-up: Touch-up damaged areas of painting using only the same type of application equipment as was used for the original application. If differences of appearance – including sheen and light reflectance – appear in the repaired area due to different application methods, sand the defective work area and repaint the entire surface (not just the original damage area) between normal surface breaks (E.G.: between wall corners, control joints, frames).
- F. Minimum Coating Thickness: Apply paint materials in coats no thinner (and not excessively thicker) than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.
- G. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.
- H. Mechanical items to be painted include, but are not limited to, the following:
 - 1. Uninsulated metal piping.
 - 2. Uninsulated plastic piping.
 - 3. Pipe hangers and supports.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

4. Tanks that do not have factory-applied final finishes.
 5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
 7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
- I. Electrical items to be painted include, but are not limited to, the following:
1. Panelboards.
 2. Electrical equipment that is indicated to have a factory-primed finish for field painting.
 3. Conduit and fittings.
- J. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- K. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- L. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- M. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
1. Apply stains if indicated.
 2. Provide satin finish for final coats.
- N. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.
- 3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:
1. Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor
 2. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
 - a. Alkali and mildew resistance.
 - b. Quantitative material analysis.
 - c. Abrasion resistance.
 - d. Apparent reflectivity.
 - e. Flexibility.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

- f. Washability.
 - g. Absorption.
 - h. Accelerated weathering.
 - i. Dry opacity.
 - j. Accelerated yellowness.
 - k. Recoating.
 - l. Skinning.
 - m. Color retention.
3. Owner may direct Contractor to stop painting if test results show any material being used does not comply with specified requirements.
- a. Contractor shall remove noncomplying paint from Project site, pay for testing, and properly re-prepare, and repaint surfaces previously coated with the noncomplying paint.
 - b. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site. Do not allow accumulation of used rags on site even if placed in air-tight containers.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

PART 4 - SCHEDULES

4.1 GENERAL

- A. Verify painting schedule and requirements for each surface and each area.

4.2 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 - 1. Semigloss Waterbased Alkyd Urethane Enamel Finish: Two finish coats over a rust-inhibitive primer.
 - a. Primer: Exterior ferrous-metal primer.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

- b. Finish Coats: Exterior semigloss waterbased alkyd urethane enamel.
- B. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:
 - 1. Semigloss Waterbased Alkyd Urethane Enamel Finish: Two finish coats over a galvanized metal primer.
 - a. Primer: Exterior galvanized metal primer.
 - b. Finish Coats: Exterior semigloss waterbased alkyd urethane enamel.

4.3 INTERIOR PAINT SCHEDULE

- A. Concrete Masonry Units: Provide the following finish systems over interior concrete masonry:
 - 1. Semigloss Acrylic Enamel Finish: Two finish coats over a block filler.
 - a. Block Filler: Concrete masonry unit block filler.
 - b. Finish Coats: Interior semigloss acrylic enamel.
- B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
 - 1. Flat Acrylic Finish at ceilings, bulkheads and soffits: Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Low-Luster Acrylic Enamel Finish at wall surfaces: Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- C. Ferrous Metal: Provide the following finish systems over ferrous metal:
 - 1. Flat or Eggshell Acrylic Finish (Dryfall) at exposed roof structure only at Contractor's option: One finish coat over factory-primed surfaces.
 - a. Finish Coat: Interior flat or eggshell acrylic (dryfall) paint.
 - 2. Semigloss Waterbased Alkyd Urethane Enamel Finish: Two finish coats over factory-primed surfaces.
 - a. Finish Coats: Interior semigloss waterbased alkyd urethane enamel.
- D. Zinc-Coated Metal: Provide the following finish systems over interior zinc-coated metal surfaces:
 - 1. Semigloss Waterbased Alkyd Urethane Enamel Finish: Two finish coats over a primer.

PRESCHOOL EXPANSION & DISTRICT OFFICE RENOVATION
MOUNT GILEAD EXEMPTED VILLAGE SCHOOLS

- a. Primer: Interior zinc-coated metal primer.
 - b. Finish Coats: Interior semigloss waterbased alkyd urethane enamel.
- E. All-Service Jacket over Insulation: Provide the following finish system on cotton or canvas insulation covering:
 - 1. Flat Acrylic Finish: Two finish coats. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coats: Interior flat latex-emulsion size.
- F. Glazed Masonry Units: Provide the following finish system over glazed masonry units:
 - 1. Satin Urethane Trim Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior urethane modified acrylic primer.
 - b. Finish Coats: Interior satin urethane trim enamel.

END OF SECTION 099112

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

SECTION 27 31 23 - INTEGRATED TELEPHONE SYSTEM – IP TELEPHONY – *Addendum 1*

PART 1 - GENERAL

1.1 Scope of Work

- A. Internet Protocol (IP) based telephony solution shall be an extension of the existing facility IP phone system. Contractor shall be responsible for all required coordination and programming for full integration of new handsets into existing District telephone system, including, but not limited to all functions outlined in this specification section.
- B. Handsets will be provided in all classrooms and offices in the project scope area.
- C. System must provide highly reliable and available switching systems, backup capabilities to perform alternate call routing in the event of major equipment failures, a wide variety of gateways to the PSTN and legacy TDM equipment, and a strong selection of IP phones.
- D. Scalable, cost-effective voice messaging solution that supports industry standards, such as AMIS-A, VPIM, LDAP and IMAP. Voice messaging platform must be server based and support full Unified Messaging allowing voice/data/fax to be centrally stored and distributed through standard email clients.

1.2 System Description

- A. PSTN Interface – Provide equipment to serve as gateways to the PSTN and interface with analog CO trunks, ISDN PRI circuits, DS1 circuits, caller ID, and E911 services.
 - B. IP Phones – Full range of IP Phones with integral multi-port 10/100 ethernet switches. IP handsets shall be powered utilizing IEEE 802.3af compliant DTE power over ethernet.
 - C. Provide Power Failure Transfer (PFT) unit for E-911 and emergency backup including one (1) analog PFT emergency backup phone.
 - D. Voice Mail agent - Voice mail with unified messaging support on all voice mail boxes. Voice applications are physically independent from the call processing and voice processing infrastructure, and they may reside anywhere within your network.
 - E. Emergency Responder Agent – Automatically track and locate users and keep database up-to-date for 911 reporting. Automatically route outbound emergency calls to the gateway associated with the PSAP nearest the caller. Provide real time alerts to emergency calls via email, pager, telephone call, and web page notification. Maintain system log of all emergency calls.
 - F. E911 – The phone system sends 911 calls to appropriate gateway based on current caller location. The system will replace the original calling party number with an Emergency Location Identification Number (ELIN) (ELINs are DIDs assigned to locations). The phone system intercepts 911 calls and routes them to the correct PSAP associated with the location of the call. The passed CPN/ELIN keys are entered into the MSAG database to provide the address/location of call originator. Cache the association of ELIN to original calling party number for return calls from PSAP. Alert 3rd parties via e-mail, pager, attendant console, specific individual's phones (superintendent, principal, security office), web, printer, etc. with MSAG database information associated to 911 call. Track emergency call history, audit configuration changes. The E911 primary service interface will be located at the HS.
1. The IP telephony system including Teleco service interface and system hardware shall provide the ability to do analog 911 services based upon pre-determined address/line matrix from the back-up call processing in the event of a failure of or loss of communications to the call processing agent.

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- G. Server UPS.

1.3 Quality Assurance

- A. The Contractor shall maintain a fully equipped, factory certified service organization capable of providing full maintenance and service of the installed system within 24 hours. This facility shall be available for inspection by the Engineer.
- B. All system components shall be UL listed.
- C. Installation shall be in compliance with the National Electric Code and all other applicable Codes.
- D. The system shall be in compliance with all FCC rules and regulations.
- E. The Contractor shall employ factory trained and certified service personnel for the installation, service and maintenance of the system.

1.4 Contractor Qualifications

- A. The IP Telephony System shall be furnished, installed and programmed by a contractor who meets all the requirements listed herein. It shall not be acceptable for the IP Telephony System contractor to utilize a sub-contractor for any portion of the work, unless the sub-contractor has been approved in writing by the Engineer based upon adherence to the qualifications listed herein.
- B. The Contractor shall maintain a fully equipped, factory certified service organization capable of providing full maintenance and service of the installed system within 24 hours. This facility shall be available for inspection by the Engineer.
- C. The Contractor shall employ factory trained service personnel for the service and maintenance of the system.
- D. The Contractor shall have had a minimum of 1 year experience with the specified IP Telephony System. This experience shall include having completed a minimum of 2 installations in the past 12 months of similar size and scope. The Contractor shall provide references and contact information for the project sites in which the qualifying installations occurred.

1.5 Shop Drawings

- A. A complete list of materials with model and part numbers and references to the Part 2 specification paragraph numbers.
- B. Manufacturers Data Sheets of all products and cabling, specific to the project. Data sheets shall show the exact parts, with model numbers and options as required and clearly identified.
- C. Qualifications
 - 1. A statement of contractor's qualifications to verify compliance with other provisions within the specifications, unless the contractor has been pre-approved.
- D. Job specific wiring diagrams.
 - 1. This indicates a block diagram that shows all major items of equipment required for the contract project and the actual interconnection that will be installed.
 - 2. Details of interconnection with other systems

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- E. Supplier shall provide rack elevations showing the configuration of all rack mounted equipment including detailed interconnection diagrams between equipment
 - F. 30x42 floor plans at a scale of not less than 1/8 inches =1 foot-0 inches showing the location of all items of equipment. Drawings shall also indicate each location where electrical power is required, and the specific configuration of that power connection (voltage, plug type, mounting height, etc.)
 - G. Software data – The data package shall consist of manufacturer's data sheets of all system and application software being provided with sufficient information to verify that all specified features and functions are being addressed.
- 1.6 All materials furnished under this contract shall be new, of highest quality, and shall be of a regularly manufactured line, currently in production at the time of installation.

PART 2 - PRODUCTS

2.1 Product Equivalency

- A. Where products are listed with multiple manufacturers, these manufacturers will be approved as equals if all specified features are provided. Any equipment not specifically approved in writing prior to the bid date will not be considered regardless of qualifications. Failure to provide the "precise functional equivalent" shall result in the removal of the alternate equipment at the Contractor's expense.
- B. Different manufacturers may require various options, accessories, converters, patch cables, etc. to perform the specified features and functions. Therefore, all material and/or equipment necessary for proper operation of the system shall be deemed part of these specifications.

2.2 General

- A. This specification is intended to establish a carefully planned minimum level of quality and performance for all components, and will be rigorously enforced by Owner. Acceptable manufacturers of components described herein are
 - 1. Cisco
- B. The use of the same manufacturer for the voice main platform is encouraged but not required. The contractor may provide an alternative 3rd party voice mail platform that meets or exceeds the performance and feature specifications herein. If the Contractor chooses a 3rd party voice mail platform, the Contractor will be responsible for all integration and licensing issues and must provide a system that fully integrates with the VoIP platform. Any hardware, software, programming, etc. required to fully integrate with the VoIP platform will be considered to be included in this contractor's scope of work.
- C. These manufacturers will be approved as equals **if all specified features are provided**. Other manufacturers must submit literature with all system features listed at least 15 days prior to the bid due date to be considered. Other manufacturers will be approved in writing prior to bid if equipment submitted is acceptable. Any equipment not specifically approved in writing prior to the bid date will not be considered regardless of qualifications.
- D. The VoIP Telephony Solution shall be a regularly manufactured system offered by a single manufacturer/source as an integrated system.
- E. The contractor shall provide any/all required licenses for new handsets to integrate with existing District Cisco Call Manager System.

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

2.3 Digital Classroom Telephone (STEL) And Digital Office Telephone (DTEL)

- A. Provide two programmable line/feature buttons and four interactive soft keys that guide a user through call features and functions. The STEL also features a large pixel-based LCD display. The display provides features such as date and time, calling party name, calling party number, and digit dialed. The display also provides feature and line status, speaker (hands free) and headset features, and a mute button, which controls speaker or handset or headset microphones.
- B. Messages - identifies incoming messages to display them as internal, external call logs. This allows you to quickly identify and effectively return calls.
- C. Directories - Among the directories that will be available are Personal, Local, and Corporate. The corporate directory will integrate with your corporate LDAP3 standard directory.
- D. Settings—Display contrast, over 24 user configurable ringer tones, volume settings, and other user settings and preferences. Network Configuration preferences can also be set up.
- E. Services—This is the key of the future. Capabilities using XML for instance will allow user access to ever growing features and destinations.
- F. Information—This on line help feature gives the user instant information via the large display on how keys, buttons, and features are used.
- G. The IP phone features a high-quality, Polycom speaker phone technology. It also includes an easy-to-use speaker on/off button and microphone mute buttons.
- H. The internal Ethernet switch allows direct connection to a 10/100BaseTx Ethernet network via an RJ-45 interface that provides single LAN connection. The second RJ-45 can be used to connect a colocated PC. Users can direct the phone and PC at separate virtual LANs (VLANs) (802.1Q). Also the handset can remain in its cradle making headset use simpler.
- I. Convenient volume control buttons for the speakerphone, handset, headset, and ringer volume. The footstand of the STEL is adjustable from flat to 60 degrees to provide optimum display viewing and comfortable use of all buttons and keys.
- J. The STEL shall receive power down the LAN.
- K. The phone also features:
 - 1. 24-user adjustable ring tones
 - 2. A hearing-aid-compatible handset (meets American Disabilities Act [ADA] requirements)
 - 3. G.711 and G.729a audio compression
 - 4. H.323 and Microsoft NetMeeting compatibility
 - 5. An IP address assignment---Dynamic Host Configuration Protocol (DHCP) client or statically configured
 - 6. Comfort noise generation and voice activity detection (VAD) programming on a system basis
 - 7. EIA/TIA RS-232 port for add-on options
- L. Refer to drawings for quantities and locations. Each handset to be provided with call processing and voicemail licenses.
- M. Handset Manufacturer and Model:
 - 1. Cisco IP Phone 7821

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- N. Contractor shall provide any/all required accessories for wall mounting installations where required. Refer to Technology drawings and Architectural elevations for exact mounting locations of all telephone handsets.

PART 3 - EXECUTION

3.1 General Installation

- A. FCC registration number and certificate shall be provided.
- B. Install systems in accordance with NEC 760 and other applicable codes. Install system to comply with drawings and final shop drawings in compliance with manufacturer instructions. Provide all required hardware and labor for rack mounting of head-end system components.
- C. It is the Contractor's responsibility to program the devices in this section according to the Owner's wishes. This involves day and night restrictions for each phone station, time schedules, building zoning, etc. The Contractor shall meet with the Owner and/or Engineer and reach agreement on the programming. This programming agreement shall then be written out in detail and forwarded to the Engineer for approval. After approval is granted, proceed with final programming.
- D. The final extension and station numbering shall be identical to the room numbering system the Owner uses and displays throughout the building. Extensions within the building shall be reached by use of the room number from any handset.

3.2 Grounding

- A. Contractor shall provide equipment-grounding connections for telephone systems as indicated or as directed by system supplier. Tighten connections to comply with tightening torque's specified in UL Standard 486A to ensure permanent and effective grounds.
- B. All consoles shall be provided with a #8 AWG ground wire to earth ground. Conduit shall not be acceptable for this purpose.

3.3 Programming

- A. It is the Contractor's responsibility to program the system in this section according to the Owner's wishes. The Contractor shall meet with the Owner and/or Engineer and reach agreement on the programming. This programming agreement shall then be written out in detail and forwarded to the Engineer for approval. After approval is granted, proceed with final programming.

3.4 Identification/Labeling

- A. Contractor shall identify all major items of equipment and tag all cables with permanent type markers to denote equipment served. Cables shall be tagged at both ends and at each point where the cable is administered.
- B. The contractor shall be responsible for generating and programming the labeling for camera information within the recorder software.
- C. All labeling and recording shall be approved by the Owner and the Engineer prior to application.

3.5 Telephone Service

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- A. Provide all labor and material required to make all final connections to the telephone service provider(s) Demarcation location and equipment. Coordinate with Owner selected telephone service provider(s).

3.6 Training

- A. Provide all training and utilize specified manuals and record documentation. Training shall be provided to all staff at the project site and coordinated with the Owner. Provide two (2) video copies of training.
- B. Training shall include multiple four-hour sessions encompassing all instructions required for system operation. Provide operators manuals and user guides with training. Provide follow up training after initial training. Provide a total of eight (8) hours of system training to the Owner.
- C. Training shall utilize the equipment provided at the project site. Coordinate use, time and availability of equipment with the Owner.
- D. Demonstrate adjustment, operation and maintenance of the system including each component and control.

3.7 Project Record Documents:

- A. Copies of all approved shop drawings with the Engineer's stamp.
- B. Owner's manuals for every item of equipment when available from the manufacturer. These shall be the technical manuals provided by the manufacturer and shall not consist of generic sales brochures. Technical manuals shall provide complete specifications for the equipment as well as complete operating, maintenance, troubleshooting and product repair/replacement information. Where available only in electronic format, the contractor may provide a CD with electronic versions of Owner's manuals. CDs containing electronic versions of Owner's manuals must contain the proper software viewers for each document type.

1. STEL Handset

- C. Technology drawings updated with final as-built information. This shall be in the form of a complete set of Technology drawings with as-built information indicated in colored pen based upon actual field conditions. Drawings shall be coordinated and referenced to the O & M manuals and related wiring diagrams. Floor plan drawings shall be 0.125 inch = 1 foot AutoCAD drawings to provide for clear, legible documents. Provide the Owner a CD-Rom containing all final AutoCAD drawing files of the entire system and floor plans.
- D. System schematic and block diagrams for every system updated with final as-built information. These drawings shall define the exact arrangement of each system including wiring configuration, device locations and cable types.
- E. Rack elevations for all systems with rack mounted equipment.
- F. Information for reordering replacement parts.
 - 1. Provide a replacement parts list.
 - 2. Provide a list of recommended parts, tools, and instruments for testing and maintenance purposes.
- G. System Operating Instructions: Provide a clear and concise description of operation which gives, in detail, the information required to properly operate the equipment and
- H. Provide statement of warranty with the O&M manuals.

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

3.8 Warranty

- A. Warrant all workmanship, equipment, material and software entering into this contract for a period of three (3) years from date of final acceptance or date of beneficial use, as agreed to between Contractor and Architect. Any materials or equipment proving to be defective during the warranty period shall be made good without expense to the Owner. Provide a statement of this warranty with the O & M Manuals.
- B. Make available a service contract offering continuing factory authorized service of this system after the initial warranty period.
- C. The Contractor shall be responsible to provide service during normal working hours within (8) hours after notification by the Owner for normal service or within (2) hours for emergency service. Emergency service is defined as the loss of 25 percent or more of outside line capacity, the loss of 25 percent or more of telephone stations, or the loss of the main console.
- D. If equipment cannot be repaired within 24 hours of service visit. Contractor shall provide "loaner" equipment to the Owner at no charge.

3.9 Software Support Agreement

- A. Provide a software support agreement (SSA) with the project that covers the entirety of the system including all end devices, servers, etc. as part of the completed system for a period of not less than 1 year. Agreement shall cover software upgrades, system patches and firmware releases and all labor/material to implement at no additional cost to the owner.
- B. The SSA shall commence at the completion of the project after final inspection, system demonstration and system training.
- C. Provide a copy of the SSA including start and end dates, and a descriptive narrative of what is included with the close-out documents.

PART 4 – UNIT PRICES

4.1 The Contractor shall provide a unit price for the following items listed in this document:

- E. STEL telephone.

4.2 These prices will be used by the Owner to add OR deduct from the base bid. Provide the add and deduct cost of each requested unit price.

END OF SECTION

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

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SECTION 28 23 01 - VIDEO SURVEILLANCE – IP – Addendum 1

PART 1 - GENERAL

1.1 General

- A. These specifications shall be utilized for the expansion of the existing district-wide ~~Milestone~~ **Avigilon Alta** system as specified herein and as shown on the bid documents for the renovation of the Pre-Schools space. Cameras shall be as provided by Avigilon.

1.2 Scope of Work

- A. These Specifications contained herein describe specific functional requirements of the CCTV system. It is not the intent of these specifications to detail and describe the exact performance of the system. The system features outlined in the Specifications are deemed mandatory for the project. References to model numbers are intended only for descriptive purposes. Systems that deviate from these Performance Specifications shall be considered alternate systems.
- B. IP based video surveillance supporting a single building, single site, multiple buildings/multiple sites.
 - 1. The system shall provide a true client-server architecture enabling the total system to appear as a single logical device regardless of the number of cameras or individual NVS/NVR units that are utilized across either the LAN or WAN. System shall be Single Site, Multiple Site Enterprise Class, Multiple Site Global Class.
- C. Interior Camera System - System consists of multiple IP based cameras with specified housings, mounting, lenses, features, etc. throughout the building interior as indicated on the drawings and as specified herein.
- D. Video Management - Equipment and software to process video from all cameras and provide control/distribution as required for storage, archive, preview, and live monitoring of all video files and streams.
- E. Video Recording - Equipment and software to receive, store and archive the network video from all cameras as indicated on the drawings and as specified herein.
- F. Video Clients – Equipment and software to provide direct, real-time, GUI based access to live and recorded video.
- G. Video Monitoring – Equipment and software to provide reception, decoding and display of real-time encoded network video.
- H. Network Electronics – Provided under section 27 21 00.
- I. Network Camera Cabling
 - 1. Data/Video Provided under section 27 15 13
 - 2. Low voltage power – Provided under this section

1.3 Quality Assurance

- A. All system components shall be UL listed.
- B. Installation shall be in compliance with the National Electric Code and all other applicable codes. The system shall be in compliance withal FCC Rules and Regulations.

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- C. All equipment described herein shall be the product of a manufacturer of established reputation and experience, who shall have produced similar equipment for a period of at least 2 years and who shall be able to refer to similar installations within a 75 mile radius now rendering satisfactory service.
- D. The manufacturer and their local agent shall show satisfactory evidence upon request that they maintain a fully equipped service center capable of furnishing adequate inspection and service to the equipment including standard replacement parts. The manufacturer and /or agent shall be prepared to offer a service contract for the maintenance of the system after the warranty period.
- E. To establish continuity in the manufacturer, like systems components (e.g. all cameras) shall be the standard product of one manufacturer. The manufacturer will have a minimum of two (2) years' experience in the manufacture of products specified.
- F. All materials furnished under this contract shall be new, of highest quality and shall be of a regularly manufactured line, currently in production at the time of installation.
- G. All material furnished under this contract shall meet or exceed minimum performance and operational requirements as established by the system vendors for the configurations being implemented for this project.
- H. System shall conform to the following standards:
 - 1. National Fire Protection Association.
 - 2. NFPA 730 – Guide for Premises Security
 - 3. NFPA 731 – Standard for the Installation of Electronic Premises Security Systems
 - 4. National Electric Code.
 - 5. American with Disabilities Act.
 - 6. Underwriter's Laboratory.
 - 7. FCC Class B.
 - 8. NEMA Type 4AX.
 - 9. NEMA Type 1.
 - 10. NTSC/EIA.
 - 11. ISO/IEC 14496-2 MPEG-4.
 - 12. H.264.
 - 13. Latest ANSI TIA/EIA-568, 569, 606, 607 Standards and Eleventh Edition (or later).
 - 14. BICSI Telecommunications Distribution Methods Manual (TDMM)

1.4 Contractor Qualifications

- A. The Closed Circuit Television System shall be furnished, installed and programmed by a contractor who meets all the requirements listed herein. It shall not be acceptable for the CCTV contractor to utilize a sub-contractor for any portion of the work, unless the sub-contractor has been approved in writing by the Engineer based upon adherence to the qualifications listed herein.
- B. The Contractor shall maintain a fully equipped, factory certified service organization capable of providing full maintenance and service of the installed system within 24 hours. This facility shall be available for inspection by the Engineer.
- C. The Contractor shall employ factory trained service personnel for the service and maintenance of the system.
- D. The Contractor shall have had a minimum of 1 year experience with the specified CCTV system. This experience shall include having completed a minimum of 2 installations in the past 12 months of similar size and scope. The Contractor shall provide references and contact information for the project sites in which the qualifying installations occurred.

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- 1.5 Shop Drawings - Submit shop drawings including product data sheets and wiring diagrams per requirements in the General Conditions including the following:
- A. A complete list of materials with model and part numbers and references to the Part 2 specification paragraph numbers.
 - B. Manufacturers Data Sheets of all products and cabling, specific to the project. Data sheets shall show the exact parts, with model numbers and options as required and clearly identified.
 - C. Qualifications
 - 1. A statement of contractor's qualifications to verify compliance with other provisions within the specifications, unless the contractor has been pre-approved.
 - D. Job specific wiring diagrams.
 - 1. This indicates a block diagram that shows all major items of equipment required for the contract project and the actual interconnection that will be installed.
 - 2. Details of interconnection with other systems. Refer to section 28 11 00.
 - E. Supplier shall provide rack elevations showing the configuration of all rack mounted equipment including detailed interconnection diagrams between equipment
 - F. 30x42 floor plans at a scale of not less than 1/8 inch = 1 foot-0 inches showing the location of all items of equipment. Drawings shall also indicate each location where electrical power is required, and the specific configuration of that power connection (voltage, plug type, mounting height, etc.)
 - G. Software data – The data package shall consist of manufacturer's data sheets of all system and application software being provided with sufficient information to verify that all specified features and functions are being addressed.
 - H. Submittals that do not contain all the required information will be REJECTED unless prior approval for partial submittals has been approved.

PART 2 - PRODUCTS

2.1 Product Equivalency

- A. Where products are listed with multiple manufacturers, these manufacturers will be approved as equals if all specified features are provided. Any equipment not specifically approved in writing prior to the bid date will not be considered regardless of qualifications. Failure to provide the "precise functional equivalent" shall result in the removal of the alternate equipment at the Contractor's expense.
- B. Different manufacturers may require various options, accessories, converters, patch cables, etc. to perform the specified features and functions. Therefore, all material and/or equipment necessary for proper operation of the system shall be deemed part of these specifications.
- C. This specification is intended to establish a carefully planned minimum level of quality and performance for all components, and will be rigorously enforced by Owner. Acceptable manufacturers of components described herein are listed within the specific product section.

2.2 Cameras

- A. The following sub-paragraphs define the basic camera/lens/housing types and minimum performance specifications that must be met by the selected products. The contract documents indicate which of these features/functions/housings/etc. must be included with each specific camera.

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- B. IP based, IPv6 compliant, Cameras shall be Open Network Video Interface Forum (ONVIF) compliant:
 - 1. Profile S – For streaming video, Streaming and Configuration
 - 2. Profile C - For IP-based basic access control, Site information and configuration, Event and alarm management, , Door access control.
 - 3. Profile G - For edge storage and retrieval, Configure, request and control recording, Receive audio and metadata stream.
 - 4. Profile Q - For quick installation, Easy setup, Discovery, configuration and control of conformant devices
 - 5. Profile A -For broader access control configuration, Granting/revoking credentials, Creating schedules, Assigning access rules.
 - 6. Profile T -For advanced video streaming, H.264 / H.265 video compression, Imaging settings, Motion alarm and tampering events.
- C. Camera shall have removable media storage provisions comprised of purpose built minimum micro SDHC/SDXC cards slots that have been optimized for 24/7 video storage and retrieval with ext4 file system, 20MBs read/write speed, up to 128GB capacity.
- D. Environment
 - 1. Exterior Domes – Housing shall be IP66/outdoor rated.
 - 2. Interior Domes – Housings shall be heavy duty and shall utilize smoked polycarbonate domes. Unless otherwise noted, all interior cameras shall be unitized domes.
 - 3. Vandal Resistant – Housings shall utilize all vandal/tamper resistant hardware and impact resistant polycarbonate domes.
- E. Mounting
 - 1. Surface – Wall. Unit shall mount on directly on wall surface/utilizing a wall mounted arm to a recessed electrical outlet box as indicated on the drawings.
 - 2. Surface - Ceiling. Unit shall mount on surface of ceiling to either an electrical outlet box or directly on the ceiling surface as indicated on the drawings.
 - 3. Recessed – Ceiling. Unit shall mount recessed in an accessible ceiling via the use of ceiling grid support hardware or shall be recessed directly into a fixed ceiling system with appropriate hardware.
- F. CODEC
 - 1. Compression
 - a. Up to 8MP - MJPEG, H.264.
 - b. 4K and above - MJPEG, H.264, H.265, proprietary dynamic compression.
 - 2. Streams – Minimum 3 streams, each at full resolution.
- G. Connectivity
 - 1. IP Cameras – Camera to utilize integral NIC for 100MBs minimum Ethernet connection.
- H. Power
 - 1. IP - Interior cameras to utilize IEEE 802.3af Power over Ethernet (PoE).
 - 2. Exterior pole mounted cameras to be provided with local 120V power supplies.
 - 3. All exterior cameras to be provided with surge arrestors on the power/signaling cabling.

2.3 Camera Hardware

- A. Dual Head Ceiling Mounted Indoor Camera – Type “IA”
 - 1. Image Sensor: 1/2.8” progressive scan CMOS
 - 2. Max Aperture: F1.6

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

3. Horizontal Field of View:
 - a. Wide: 96 Degrees
 - b. Tele: 40 Degrees
 4. Vertical Field of View
 - a. Wide: 70 Degrees
 - b. Tele: 30 Degrees
 5. Image Sensor Resolution: 3 MP
 6. Imaging Area: 5.18 mm x 3.89 mm
 7. Aspect Ratio: 4:3, 16:9
 8. Maximum Streaming Resolutions – By Sensor:
 - a. Primary (4:3): 2048x1536
 - b. Primary (16:9): 2048x1152
 - c. Secondary (4:3): 1760x1320
 - d. Secondary (16:9): 1920x1080
 9. Lens Focal Length:
 - a. Wide: 3.24mm
 - b. Tele: 7.33mm
 10. IR Illumination: 30 m
 11. Minimum Illumination Without IR:
 - a. Monochrome: 0 lux
 - b. Color: 0.0005 lux in Monochrome Mode, 0.02 lux in Color Mode
 12. Streaming Protocol/Image Compression Method: H.264, H.265, Motion JPEG
- B. Multi Head Ceiling Mounted Indoor Camera – Type “IB” and “ID”
1. Image Sensor: 1/2.8” progressive scan CMOS
 2. Aperture Range: F1.5-F1.9
 3. Horizontal Field of View: 53-99 Degrees
 4. Vertical Field of View: 29-69 Degrees
 5. Image Sensor Resolution: 3 MP
 6. Aspect Ratio: 4:3, 16:9
 7. Active Pixels – By Sensor:
 - a. 4:3 Aspect Ratio: 2048x1536
 - b. 16:9 Aspect Ratio: 1920x1080
 8. IR Illumination: 30 m
 9. Minimum Illumination Without IR:
 - a. Monochrome: 0.018 lux
 - b. Color: 0.02 lux in Color Mode
 10. Streaming Protocol/Image Compression Method: H.264, H.265, Motion JPEG
 - a. Refer to Plans for number of image sensors needed per camera location
- C. Single Sensor Wall Mounted Indoor Camera – Type “IC”
1. Image Sensor: 1/1.8” progressive scan CMOS
 2. Aperture Range: F1.3
 3. Horizontal Field of View: 47-111 Degrees
 4. Vertical Field of View: 26-57 Degrees
 5. Image Sensor Resolution: 4 MP
 6. Aspect Ratio: 4:3, 16:9
 7. Active Pixels – By Sensor:
 - a. 4:3 Aspect Ratio: 1984x1488
 - b. 16:9 Aspect Ratio: 2688x1520
 8. IR Illumination:
 - a. 50 m – Full Wide
 - b. 25 m - Tele
 9. Minimum Illumination Without IR:
 - a. Monochrome: 0.003 lux
 - b. Color: 0.008 lux in Color Mode
 10. Streaming Protocol/Image Compression Method: H.264, H.265, Motion JPEG

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- a. Refer to Plans for number of image sensors needed per camera location

2.4 Distribution Equipment

A. Fiber Converters

1. Fiber Transmitter and Receiver (Ethernet) – Unit IP full duplex, 10/100 ethernet conversion from UTP to fiber optics over standard multimode fiber optic cable (1310 nm wavelength, 20dB power budget) up to distances of 1KM.
2. Unit in building shall be rack mount chassis, modular with integrated low voltage power supply. Provide quantity of IP converters as required to serve exterior pole mounted cameras.
3. Unit at lighting pole shall be rated for outdoor use and shall be installed in pole base or supplemental pull box provided by this contractor as required. Provide mounting kits and remote low voltage power supplies as required.
4. Provide all required fiber optic and copper jumpers to patch units into fiber backbone and local camera for a complete and operational system.

2.5 CCTV Data/Video Cabling

- A. Refer to section 27 15 13 Communications Copper Horizontal Cabling.

2.6 Power Wiring – The following cable types are approved for use. The Contractor shall be responsible for selecting the proper wire type for the installation conditions with regards to codes, environment and signal quality.

- A. Indoor Power Cable - Provide plenum 1-pair power cable from each camera to remote power supply as required by camera power draw and voltage drop calculations.
- B. All outdoor power cables shall be transitioned to indoor rated, plenum rated cable upon entrance to building. Transition point shall include all required lightning and grounding protection as required by NEC and the manufacturer.
- C. Cable as manufactured by WestPenn, Belden, or CommScope.

2.7 Low Voltage Camera Power Supplies – The following power supplies are listed for use. It shall be the contractor's responsibility to provide all operating power for all cameras regardless of voltage, current and distance requirements.

- A. Multi-camera 120V to 24VAC, 60Hz power supply with individual 1.85A max current, self-resetting overcurrent on each circuit. Provide quantity of units in each building as required by quantity of cameras to be powered. Provide 120V branch circuit and connection to each unit.
- B. Multi-camera for outdoor cameras, 120V to 24VAC, 60Hz power supply with high power 4A individual circuits, isolated and fused outputs and built in system surge protection. Provide quantity of units in each building as required by quantity of cameras to be powered. Provide 120V branch circuit and connection to each unit.
- C. Individual 120V to 24VAC, 60Hz, 80VA power supply with surge protection and screw terminals for 120V input. Provide unit in junction box above ceiling near camera. Provide 120V branch circuit and connection to unit.
- D. Individual 120V to 24VAC, 60Hz, 80VA power supply with screw terminals for 120V input. Provide unit in weatherproof junction box mounted to structure near camera. Provide 120V branch circuit and connection to unit.

PRESCHOOL EXPANSION AND DISTRICT OFFICE RENOVATION
MT. GILEAD PUBLIC SCHOOLS

- E. Where local 120V power is provided and transformed at individual cameras, provide line isolation transformers to prevent noise and interference due to ground loops, unbalanced voltages, etc.
- F. Power supplies as manufactured by Altronix, Pelco or Preferred Power Products.

2.8 Network Electronics – Refer to 27 21 00 Network Electronics

2.9 Cable Management System

- A. Provide pre-manufactured cable supports. Cable supports shall be secured to building structure through threaded rod, beam clamps or other UL approved supports as required by site conditions. Components shall provide a minimum cable support point spacing of 48 inches.
- B. Cable management devices must be sized to accommodate 100 percent spare capacity of the final installed cable base.
- C. Cable management system shall be secured to building structure utilizing manufactured approved methods and hardware.
- D. Cable management system support components shall be designed with wide support surfaces that do not cause cables to be bent, crushed or otherwise deformed when installed within component loading parameters. Cable management system shall meet UL standards and be UL labeled. Utilizing elements of the building's structure such as beams, joists, etc. to hang cable from will not be acceptable.
- E. Bridle rings shall not be acceptable.
- F. Manufactured by Panduit, Caddy, Mineralac or B-Line.

PART 3 - EXECUTION

3.1 General Installation

- A. Install systems in accordance with UL, NEC and all other applicable codes. Install system to comply with drawings and final shop drawings in compliance with manufacturer instructions. Provide all required hardware and labor for rack mounting of head-end system components.
- B. Refer to plans for locations and quantities of equipment. Equipment locations shown on plans will be required to be field coordinated to ensure proper system operation. The contractor shall provide adequate costs in the bid to locate interior cameras within 10 feet in any direction of the location indicated on the bid drawings. Exact location of each camera shall be coordinated with the owner in the field prior to installation. This coordination shall include a site survey with the owner in which the use of a field of view comparator is employed.
- C. No items of equipment shall be installed in such a manner as to void or reduce the proper operating characteristics of individual components or of the system. Camera placement shall be coordinated with glass and exterior exposures to reduce or eliminate the requirement for severe back light compensation.
- D. Perform all work under the on-site supervision of a factory authorized trained technician. It shall be the responsibility of the technician to check, inspect and adjust this installation to the engineer's and owner approval. A CSR of the installing contractor or manufacturer shall train the owner's personnel on the proper operation and maintenance of the equipment. Perform all work in conjunction with this installation in accordance with good engineering practices as established by NEC.
- E. Camera Mounts: The Contractor shall install the camera mounts as specified by the manufacturer and as shown; provide mounting hardware sized appropriately to secure the mount, camera and housing, provide electrical and signal transmission cabling to the mount location as specified.

- F. Cameras: The Contractor shall install the cameras with power and signal lines to the camera; aim camera to give field of view as required by owner.
- G. Monitors: The Contractor shall install the monitors as shown and specified; connect all signal inputs and outputs as shown and specified; terminate video input signals as required; and connect the monitor to AC power and video distribution equipment.
- H. Video Recording Equipment: The Contractor shall install the video recording equipment as shown and as specified by the manufacturer; connect video signal inputs and outputs as shown and specified; connect alarm signal inputs and outputs as shown and specified; and connect video recording equipment to AC power.
- I. Delivery of all loose equipment which is to be turned over to owner shall be carefully coordinated and scheduled with owner prior to shipment

3.2 Wiring Installation

- A. CCTV wiring shall be furnished and installed in accordance with manufacturer's recommendations in compliance with all Local, State and National codes. This contract shall be responsible for furnishing and installing all required cabling between components to form a complete and operational system meeting all the requirements of this specifications.
- B. Provide firestop material and seal all cable penetrations in the building.
- C. All wiring between devices shall be run open wired above accessible ceilings. Where existing cable management systems are in place and there is adequate capacity to install the CCTV wiring, the contractor may utilize these pathways providing they have coordinated with all other wiring contractor on site. Where multiple runs are required all cables shall be bundled with approved cable ties on four foot centers.
- D. Where pathways do not exist for SMS wiring, this contract shall be responsible for providing all required cable management systems such as J-hooks to support communications cabling to meet building codes and manufacturer's recommendations.
- E. Cables shall not be laid upon ceilings or supported in a manner that would violate any codes or standards.
- F. All cabling installed in ceiling spaces that are used for air distribution plenums shall be UL plenum rated.
- G. All control and signal cable shall be installed continuous and without splices. Provide appropriate connectors or pre-manufactured cables for each application.

3.3 Telecommunications Rooms

- A. The lay-out of the telecommunications rooms as depicted on the drawings shall be utilized as a general guide for bidding purposes. The final room layout shall be carefully coordinated with input from the owner and from other trades with equipment and/or cabinets to be placed in the room. Final configuration of telecom rooms shall be submitted to Engineer as a coordination drawing with information from all other trades occupying the same room for review prior to permanent mounting of equipment or termination of cabling.
- B. Coordinate lay-out of telecom rooms to avoid placing telecommunications equipment and cabinets under water piping (other than sprinkler heads) or HVAC units.
- C. Coordinate lay-out of telecom rooms with electrical plans and locations of electrical outlets.

- D. Lay-out of telecommunications equipment cabinets and racks shall provide a minimum of 36 inches isle in front and behind equipment racks and cabinets which is clear of obstructions or equipment protrusions.
- E. Coordinate rack locations and orientation to maintain required clearances including any equipment depths that may have to be accounted for. Some equipment, such as UPS units may have special mounting requirements that need additional coordination.

3.4 Grounding

- A. The installing contractor shall be responsible for ensuring the grounding integrity of all installed equipment to eliminate the potential for equipment or personnel hazards due to improperly or inadequately grounded systems.
- B. All grounding and bonding shall be in conformance with the National Electric Code, article 250 and as recommended by EIA/TIA-607.
- C. The Division 16 Contractor has provided 120V branch circuitry for use by the CCTV system contractor. The branch circuitry is run with a dedicated equipment grounding conductor which shall be utilized by the CCTV system equipment. In no case shall the CCTV system installation compromise the integrity of the Building Electrical Grounding System.

3.5 Programming

- A. It is the Contractor's responsibility to program the system in this section according to the Owner's wishes. This involves camera labeling, camera operation sequences, camera and recorder schedules, etc. The Contractor shall meet with the Owner and/or Engineer and reach agreement on the programming. This programming agreement shall then be written out in detail and forwarded to the Engineer for approval. After approval is granted, proceed with final programming.
- B. Each building shall have the following minimum programming:
 - 1. Camera labels programmed in each NVS/NVR.
 - 2. Camera record rates based upon TOD schedules, alarm events, motion events.
 - 3. Camera motion detection recording based upon TOD schedules. Motion detection scene masking.
 - 4. PTZ cameras – Home position, tours, alarm pre-sets.
 - 5. Camera username/password changed from the default to owner selected.
- C. Additional programming at each building shall include set-up of graphical floor plans with interactive camera icons for all cameras local to that building. District NOC shall include set-up of graphical floor plans with interactive camera icons for all sites.
- D. Set-up of passwords and a minimum of four (4) user access levels including assignment of specific privileges for each user access level.

3.6 Identification/Labeling

- A. Contractor shall identify all major items of equipment and tag all cables with permanent type markers to denote equipment served. Cables shall be tagged at both ends and at each point where the cable is administered.
- B. The contractor shall be responsible for generating and programming the labeling for camera information within the recorder software.
- C. All labeling and recording shall be approved by the Owner and the Engineer prior to application.

3.7 Site Testing

- A. General: The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all site testing. The Owner will witness all performance verification.
- B. Contractor's Field Testing: The contractor shall place the entire system into operation and shall field verify that all aspects of the CCTV system including camera video, recording schedules, alarm events, GUI operation, System administration, etc. At the completion of testing, the contractor shall produce a written document indicating successful system testing.
- C. Performance Verification Test: The Contractor shall demonstrate to the owner that all aspects, features and functions of the completed CCTV system comply with the contract requirements. The performance verification test, as specified, shall not be started until receipt by the Contractor of written permission from the Owner, based on the Contractor's Field Testing sign-off. The Owner may terminate testing at any time when the system fails to perform as specified.

3.8 Training Requirements

- A. Provide the owner with a minimum of ~~24~~ **40** hours of training designed to make all users familiar with the operation of the system.
 - 1. The Contractor shall conduct training courses for designated personnel in the maintenance and operation of the CCTV system as specified. The training shall be oriented to the specific system being installed under this contract. Training manuals shall be delivered for each trainee with two additional manuals delivered for archiving at the project site. The Contractor is responsible for furnishing all audio-visual equipment and all other training materials and supplies. A training day is Monday through Friday, during normal working hours for the trained staff at the facility. Approval of the planned training schedule shall be obtained from the Owner at least 14 days prior to the training.
 - 2. The course shall be taught at the project site only after successful completion of the Contractor's Performance Verification Testing. No part of the training given during this course will be counted toward completion of the performance verification test. The course shall consist of classroom instruction, hands-on training, instruction on the specific hardware configuration of the installed system, and specific instructions for operating the installed system. The course shall demonstrate system start up, system operation, system shutdown, system recovery after a failure, the specific hardware configuration, and operation of the system and its software. The Contractor shall prepare and insert additional training material in the training manuals when the need for additional material becomes apparent during instruction. The course shall include:
 - a. General CCTV hardware, installed system architecture and configuration.
 - b. Functional operation of the installed system and software.
 - c. Operator commands.
 - d. Fault diagnostics and correction.
 - e. General system maintenance.
 - f. Replacement of failed components and integration of replacement components into the operating CCTV system.
 - 3. Provide all training and utilize specified manuals and record documentation. All training shall be provided at the project site and coordinated with the Owner.
- B. Training shall utilize the equipment provided at the project site. Coordinate use, time and availability of equipment with the Owner.
- C. Demonstrate adjustment, operation and maintenance of the system including each component and control.
- D. This training period shall be scheduled with the Owner after the successful completion of the system. Training plan, time line, and agenda shall be provided to District IT personnel and signed off by District and Contractor.
- E. Provide owner with a digital video copy of all training.
- F. Training to occur in 2 (or 4) hour increments.

- G. Training to be completed by a certified manufacturer instructor.

3.9 As Built Documentation

- A. Copies of all approved shop drawings with the Engineer's stamp.
- B. Owner's manuals for every item of equipment when available from the manufacturer. These shall be the technical manuals provided by the manufacturer and shall not consist of generic sales brochures. Technical manuals shall provide complete specifications for the equipment as well as complete operating, maintenance, troubleshooting and product repair/replacement information. Where available only in electronic format, the contractor may provide a CD with electronic versions of Owner's manuals. CDs containing electronic versions of owner's manuals must contain the proper software viewers for each document type.
 - 1. Interior Camera assembly including housing and lens
 - 2. Exterior Camera Assembly including housing and lens.
 - 3. Each type of camera power supply
 - 4. Camera recorder
 - 5. Racks/Cabinets
 - 6. System Software.
- C. Technology floor plan/site drawings updated with final as-Built information. This shall be in the form of a complete set of Technology drawings with as-built information indicated in colored pen based upon actual field conditions.
- D. System schematic and block diagrams for every system updated with final as-built information. These drawings shall define the exact arrangement of each system including wiring configuration, device locations and cable types.
- E. Rack elevations for all systems with rack mounted equipment.
- F. Provide statement of warranty.

3.10 Warranty

- A. Warrant all workmanship, equipment, material and software entering into this contract for a period of three (3) years from the date of final acceptance or date of beneficial use, as agreed to between Contractor and Architect. Any materials or equipment proving to be defective during the warranty period shall be made good without expense to the Owner. Provide statement of this warranty with the O&M manuals.
- B. During the first year's warranted operation, the Contractor shall perform two inspections at 6-month intervals or less. This work shall be performed during regular working hours, Monday through Friday, excluding legal holidays. These inspections shall include:
 - 1. Visual checks and operational test of the multiplexer, peripheral equipment, interface panels, recording devices, monitors, video equipment electrical and mechanical controls, and a check of the picture quality from each camera.
 - 2. Correct all diagnosed problems.
 - 3. Resolve any previous outstanding problems.
- C. Make available a service contract offering continuing factory authorized service of this system after the initial warranty period.
- D. The Contractor shall be responsible to provide service during normal working hours within (4) hours after notification by the Owner for normal service or within (2) hours for emergency service. Emergency service is defined as the loss of 25 percent or more of system component operation, or the

loss of the video switcher or other head-end equipment. Provide an on-site authorized factory technician within 24 hours if required.

3.11 Certification

- A. Upon completion of the testing, the manufacturer or representative shall issue to the Owner a letter of certification attesting to the fact that he has tested and adjusted the system, that all components are properly installed and free of defects, and that the system is in compliance with this specification

END OF SECTION